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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,939	10/29/2003	Yasuo Sawada	R2184.0268/P268	6142
24998	7590	08/28/2006	EXAMINER	
DICKSTEIN SHAPIRO LLP			BIBBINS, LATANYA	
1825 EYE STREET NW			ART UNIT	
Washington, DC 20006-5403			PAPER NUMBER	
			2633	

DATE MAILED: 08/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/694,939		SAWADA ET AL.	
	Examiner		Art Unit	
	LaTanya Bibbins		2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on October 29, 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☒ Claim(s) 3 and 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/29/03, 04/16/04</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

The abstract of the disclosure is objected to because it exceeds 150 words. Correction is required. See MPEP § 608.01(b). Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet ***within the range of 50 to 150 words***. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Objections

Claims 3 and 7 are objected to because of the following minor informalities: claims 3 and 7 recite "a recording layer formed of a material changeable into ***either*** an amorphous state ***and*** a crystal state." The claims fail to recite an alternative to the

amorphous state. Examiner suggests "a recording layer formed of a material changeable into *either* an amorphous state *or* a crystal state." Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spruit (US Patent Number 6,751,513 B1) in view of Yuzurihara et al. (US PGPub Number 2004/0076099 A1).

Regarding claim 1, Spruit discloses an information recording apparatus for recording information on a recording medium by irradiating a pulsed light onto the recording medium (see column 3 lines 52-65 and Figure 5), comprising: a rotating mechanism that rotates the recording medium at one of predetermined recording speeds (see column 10 lines 18 and 19 and Figure 5 element 7); an optical head irradiating the pulsed light onto the recording medium (see column 3 lines 57 and 58 and Figure 5 element 2); and a controller (Figure 5 element 1) that controls the optical head so as to irradiate the pulsed light (column 3 lines 58 and 59) so that a length of a recording mark formed on the recording medium by irradiation of the pulsed light is an n

times of a period T_w of a basic clock, where n is a natural number (see column 2 lines 59 and 60 and Figures 1a and 1b), the controller also controls the pulsed light in accordance with one of predetermined recording strategies which matches the one of the predetermined recording speeds (see column 9 lines 17-21) so that the pulsed light contains a train of multi-pulses of a light (see column 1 lines 21 and 22) having a recording power P_w and a light having a bias power P_b is irradiated during intervals between the adjacent multi-pulses and a light having an erasing power P_e is irradiated during intervals between adjacent trains of the multi-pulses, where a relationship $P_w > P_e > P_b$ is satisfied (see column 3 lines 60-64 and Figure 1b), wherein the controller adds an off-pulse to an end of a final pulse of the train of multi-pulses so that the light having the bias power P_b is irradiated during a period T_1 of the off-pulse (see column 3 lines 62-65); and the controller is capable of setting the period T_1 of the off-pulse to a predetermined value (see column 10 lines 62-64).

Spruit, however, fails to teach a relationship where $0 \leq T_1 < 0.2T_w$ is satisfied. Yuzurihara on the other hand, teaches a cooling pulse width of zero (see paragraph [0069]), which satisfies the relationship $0 \leq T_1 < 0.2T_w$. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the pulse width of Spruit equal to zero as taught by Yuzurihara. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to improve the overwrite characteristics (see Yuzurihara paragraph [0069]).

Regarding claim 2, Spruit discloses an information recording apparatus wherein the controller sets the predetermined value of the period T_1 of the off-pulse when recording is performed in accordance with one of the predetermined recording strategies (see column 10 lines 62-64). Spruit does not teach that the recording strategy is used for the recording speed equal to or higher than 11 m/s. However, in paragraphs [0069] and [0072] Yuzurihara teaches the use of the recording strategy for the recording speed higher than 11 m/s (specifically a maximum recording linear velocity of $4x$ which corresponds to 14 m/s).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Spruit and Yuzurihara. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to improve the overwrite characteristics (see Yuzurihara paragraph [0069]).

Regarding claim 4, Spruit does not teach an information recording apparatus wherein the controller uses one of the predetermined recording strategies according to which, when a rising of a head pulse of the train of the multi-pulses leads a time when one period T_w has passed after a rising of a logical data pulse by a time interval dT_{top} , a relationship $-3T_w < dT_{top} < 0$ is satisfied. However, Yuzurihara teaches that dT_{top} lies within a variable range of -0.25 to $0.5 T$ (paragraph [0073]) which satisfies the claimed relationship $3T_w < dT_{top} < 0$.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Spruit and Yuzurihara. One of

ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to control jitter (see Yuzurihara paragraph [0070]).

Regarding claim 5, Spruit does not teach an information recording apparatus wherein the controller uses one of the predetermined recording strategies according to which the period $T1$ of the off-pulse is set as $T1=0$. However Yuzurihara teaches, in paragraph [0069], a cooling pulse width of zero, which satisfies the relationship $0 \leq T1 < 0.2Tw$.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Spruit and Yuzurihara. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to improve the overwrite characteristics (see Yuzurihara paragraph [0069]).

Regarding claim 6, Spruit does not teach an information recording apparatus wherein the recording medium is a DVD+RW, and the predetermined recording strategies includes a strategy for a recording speed of 3.5 m/s, a strategy for a recording speed of 8.4 m/s and a strategy for a recording speed of 14 m/s, and wherein the predetermined value of the period $T1$ is set when the strategy for the recording speed of 14 m/s is used to generate the pulsed light when recording.

However, Yuzurihara teaches a DVD+RW recording medium (in paragraph [0002]) and the predetermined recording strategies includes a strategy for a recording speed of 3.5 m/s, a strategy for a recording speed of 8.4 m/s and a strategy for a recording speed of 14 m/s, and wherein the predetermined value of the period $T1$ is set

when the strategy for the recording speed of 14 m/s is used to generate the pulsed light when recording (see Yuzurihara Tables 1-4)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Spruit and Yuzurihara. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the information recording apparatus of Spruit with the recording strategies of Yuzurihara in order to achieve excellent overwrite characteristics (see Yuzurihara paragraph [0104]).

Claims 3 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spruit and Yuzurihara et al. as applied to claim 1, 2, and 4-6 above, and further in view of Nakamura (US Patent Number 6,631,109 B2).

Regarding claim 3, see the teachings of Spruit and Yuzurihara above. In addition, Yuzurihara teaches a recording medium that includes a recording layer formed of a material changeable into either an amorphous state and a crystal state (Yuzurihara paragraph [0029]), and Spruit teaches that the controller uses one of the predetermined recording strategies according to which the predetermined value of the period T1 of the off-pulse is set (see Spruit column 3 lines 62-65).

Spruit and Yuzurihara do not teach a recrystallization upper limit linear velocity of the recording medium that is 9 m/s to 13 m/s. However, Nakamura teaches an optical storage medium whose phase change critical linear velocity is 0.7 times the highest

linear velocity (see column 7 lines 44-50), where the highest linear velocity of the optical recording medium is defined as 5 m/s to 28 m/s (column 3 line 26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Spruit and Yuzurihara with Nakamura. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the information recording apparatus of Spruit and Yuzurihara with the optical storage medium of Nakamura in order to provide good write/erase characteristics and improve overwrite performances when the recording is performed at the highest linear velocity (see Nakamura column 7 lines 55-58).

Regarding claim 7, Spruit discloses an information recording method for recording information on a recording medium by irradiating a pulsed light onto the recording medium (column 1 lines 17-21) so that a length of a recording mark formed on the recording medium by irradiation of the pulsed light is an n times of a period T_w of a basic clock, where n is a natural number (column 2 lines 59 and 60), the method comprising the steps of: irradiating the pulsed light containing a train of multi-pulses of a light having a recording power P_w and a light having a bias power P_b during intervals between the adjacent multi-pulses and a light having an erasing power P_e during intervals between adjacent trains of the multi-pulses, where a relationship $P_w > P_e > P_b$ is satisfied and adding an off-pulse to an end of a final pulse of the train of the multi-pulses so that the light having the bias power P_b is irradiated during a period T_1 of the off-pulse (column 1 lines 55-65 and Figure 1b).

Spruit does not teach a recording medium including a recording layer formed of a material changeable into either an amorphous state and a crystal state, and the period T_1 of the off-pulse being set to a predetermined value so that a relationship $0 \leq T_1 < 0.2T_w$ is satisfied. However Yuzurihara teaches a recording medium including a recording layer formed of a material changeable into either an amorphous state and a crystal state (paragraph [0029]) and in paragraph [0069] a cooling pulse width of zero, which satisfies the relationship $0 \leq T_1 < 0.2T_w$.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Spruit and Yuzurihara. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to improve overwrite characteristics (see Yuzurihara paragraph [0069]).

Spruit and Yuzurihara do not teach a recording medium having a recrystallization upper limit linear velocity of 9 m/s to 13 m/s, however, Nakamura teaches an optical storage medium whose phase change critical linear velocity is 0.7 times the highest linear velocity (see column 7 lines 44-50), where the highest linear velocity of the optical recording medium is defined as 5 m/s to 28 m/s (column 3 line 26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Spruit and Yuzurihara with Nakamura. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the method of recording of Spruit and Yuzurihara with the optical storage medium of Nakamura in order to provide good write/erase characteristics and

improve overwrite performances when the recording is performed at the highest linear velocity (see Nakamura column 7 lines 55-58).

Regarding claim 8, Spruit teaches an information recording method wherein the predetermined value is set to the period T1 of the off-pulse (see Spruit column 10 lines 62-64) but does not teach setting T1 when recording is performed at recording speed equal to or higher than 11 m/s. However, in paragraphs [0069] and [0072] Yuzurihara teaches the use of the recording strategy for the recording speed higher than 11 m/s (specifically a maximum recording linear velocity of 4x which corresponds to 14 m/s).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Spruit and Yuzurihara. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to improve overwrite characteristics (see Yuzurihara paragraph [0069]).

It would have also been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Spruit and Yuzurihara with Nakamura. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the method of recording of Spruit and Yuzurihara with the optical storage medium of Nakamura in order to provide good write/erase characteristics and improve overwrite performances when the recording is performed at the highest linear velocity (see Nakamura column 7 lines 55-58).

Regarding claim 9, Spruit does not teach an information recording method wherein when a rising of a head pulse of the train of the multi-pulses leads a time when

one period T_w has passed after a rising of a logical data pulse by a time interval dT_{top} , a relationship $-3T_w < dT_{top} < 0$ is satisfied. However, Yuzurihara teaches that dT_{top} lies within a variable range of -0.25 to $0.5 T$ (paragraph [0073]) which satisfies the claimed relationship $3T_w < dT_{top} < 0$.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Spruit and Yuzurihara. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to improve overwrite characteristics (see Yuzurihara paragraph [0069]).

It would have also been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Spruit and Yuzurihara with Nakamura. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the method of recording of Spruit and Yuzurihara with the optical storage medium of Nakamura in order to provide good write/erase characteristics and improve overwrite performances when the recording is performed at the highest linear velocity (see Nakamura column 7 lines 55-58).

Regarding claim 10, Spruit does not teach an information recording method wherein the period T_1 of the off-pulse is set as $T_1=0$ however, Yuzurihara teaches, in paragraph [0069], a cooling pulse width of zero, which satisfies the relationship $0 \leq T_1 < 0.2T_w$. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Spruit and Yuzurihara. One of ordinary skill in the art at the time the invention was made would have been motivated

to combine the teachings in order to improve overwrite characteristics (see Yuzurihara paragraph [0069]).


It would have also been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Spruit and Yuzurihara with Nakamura. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the method of recording of Spruit and Yuzurihara with the optical storage medium of Nakamura in order to provide good write/erase characteristics and improve overwrite performances when the recording is performed at the highest linear velocity (see Nakamura column 7 lines 55-58).

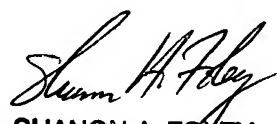
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LaTanya Bibbins whose telephone number is (571) 270-1125. The examiner can normally be reached on Monday through Friday 7:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shanon Foley can be reached on 571 272-0898. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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